Benchi Zhao

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Education

2021/10 - 2025/01 **Osaka University** **Ph.D. Engineering Science**

Supervisor: Prof. **Keisuke FUJII**

Research interests: Quantum Resource theory, Quantum Error Mitigation, Variational Quantum Algorithms

Visited Giulio Chiribella (HKU) and Xin Wang (HKUST-GZ) during PhD.

2019/10 - 2021/01 **Imperial College London** **M.sc. Physics**

Graduated with merit

2016/07 - 2019/07 **University of Birmingham** **B.sc. Physics**

Graduated with 1st class honour

Career

2025/02 – now **Hong Kong University** **PostDoc**

Supervisor: Prof. **Giulio Chiribella**

Research interests: Indefinite Causal Order, Quantum Resource Theory, Communication Theory

2020/10 – 2022/03 **Institution for Quantum Computing, Baidu** **Research Assistant**

Supervisor: Dr. **Xin Wang**

1. Investigate quantum algorithms, quantum information theory and quantum error mitigation. Finish 10+ Patents and 5 scientific papers
2. Participate the development of Paddle Quantum Platform, which was a quantum machine learning platform.

Skills

1. Master Python, Matlab, familiar with Mathematica;

2. Experienced with the development of Quantum machine learning platform (Paddle Quantum);

3. Master optimization tools, such as SDP.

4. Fluency in English, basic in Japanese.

Paper

1. **Zhao, B**., Jing, M., Zhang, L., Zhao, X., Wang, K., & Wang, X. (2023). Retrieving non-linear features from noisy quantum states. ***PRX Quantum* 5** 020357. **(Q1, IF=9.1)**
2. **Zhao, B**., Ito, K., & Fujii, K. (2024). Probabilistic channel simulation using coherence. ***Phys. Rev. Research*** 6, 043316 **(IF=3.5)**
3. Zhao, X.*, **Zhao, B**.*, Xia, Z., & Wang, X. (2022). Information recoverability of noisy quantum states. ***Quantum*** *7, 978*. **(Q2, IF=5.1) (* refers to co-first author)**
4. Zhao, X., **Zhao, B.**, Wang, Z., Song, Z., & Wang, X. (2021). Practical distributed quantum information processing with LOCCNet. ***npj Quantum Information***, *7*(1), 1-7. **(Q1, IF=6.45)**
5. Wang, Y., **Zhao, B**., & Wang, X. (2022). Quantum algorithms for estimating quantum entropies. ***Physical Review Applied*** *19(4), 044041*. **(Q2, IF=3.7)**
6. Chen, R., **Zhao, B.**, & Wang, X. (2023). Near-Term Efficient Quantum Algorithms for Entanglement Analysis. ***Physical Review Applied***, *20*(2), 024071. **(Q2, IF=3.7)**
7. Zhao, X., Zhang, L., **Zhao, B**., & Wang, X. (2025). Power of quantum measurement in simulating unphysical operations. ***Phys. Rev. Research*** **Accepted (IF=3.5)**
8. Yu, Z., Zhao, X., **Zhao, B**., & Wang, X. (2022). Optimal quantum dataset for learning a unitary transformation. ***Physical Review Applied*** *19(4), 034017*. **(Q2, IF=3.7)**
9. **Zhao, B**, and Fujii, K. Variational quantum Hamiltonian engineering. *arXiv:2406.08998* (2024).